REMARKS/ARGUMENTS

The Examiner is thanked for the performance of a thorough search. By this amendment, Claims 9-10, 22, 30-31, 41-42, 46, 58-59, and 61 have been amended. No claims have been cancelled or added. Hence, Claims 1-2, 4-14, 16, 21-23, 25-35, 37, 39-42, 46, 48-49, and 51-61 are pending in the application. The amendments to the claims as indicated herein do not add any new matter to this application. Each issue raised in the Office Action mailed July 30, 2010 is addressed hereinafter.

I.   ISSUES NOT RELATING TO CITED ART

A.   ALLOWED CLAIMS

Claims 1-2, 4-8, 11-14, 16, 21-23, 25-29, 32-35, 37, 39-41, 48-49, 51-57, and 60 are allowed.

B.   INTERVIEW SUMMARY

The Examiner is thanked for the interview of October 29, 2010, in which possible amendments to Claims 9, 10, and 42 were discussed, as well as application of the art to those claims. The Examiner agreed that the amendments overcome the current rejections of the claims and indicated that he will do a new search based on the amendments.

C.   CLAIM AMENDMENTS

Claims 9, 10, 30, and 31 now recite "in response to a single request to the database server for access to one or more XML resources from said database repository, before the database server executes said single request, the database server computing . . .", which is amply supported in the specification, at least by paragraph [0021]. Further, Claims 10 and 31 now recite "wherein an operator contained in at least one of said one or more predicates is an operator that determines

whether a particular XML resource can be located in said database repository at a terminal location of a particular specified path, specified in said at least one predicate, through a portion of said hierarchy", which is amply supported in the specification, at least by paragraphs [0042] and [0044]. Also, Further, Claims 9 and 30 now recite "wherein an operator contained in at least one of said one or more predicates is an operator that determines whether a particular XML resource can be located in said database repository through a particular specified path, specified in said at least one predicate, through a portion of said hierarchy", which is amply supported in the specification, at least by paragraphs [0042] and [0043].

Claims 42, 46, and 58 now recite "wherein the two or more methods of accessing said one or more XML resources from said database repository include accessing said one or more XML resources through an index and accessing said one or more XML resources without using the index", which is amply supported in the specification, at least by paragraph [0022].

Claims 59 and 61 now recite "in response to receiving the request, computing a computational cost associated with each of two or more methods of accessing said one or more XML resources, comprising computing a selectivity value, based at least in part on the statistics, for a predicate included in the request" and "wherein the two or more methods of accessing said one or more XML resources include accessing said one or more XML resources through an index and accessing said one or more XML resources without using the index", which are amply supported in the specification, at least by paragraph [0022].

Allowed Claims 22 and 41 have been amended only to remove the clause "wherein the method is performed by one or more computing devices", because these claims are directed to the storage that stores the instructions, rather than to the method itself.

II.   ISSUES RELATING TO CITED ART—CLAIMS 9-10, 30-31, 42, 46, 58-59 AND 61

Claims 9-10, 30-31, 42, 46, 58-59 and 61 are rejected under 35 U.S.C. § 103(a) as being

unpatentable over *Estimating the Selectivity of XML Path Expressions for Internet Scale*

Applications by Aboulnaga et al. ("Aboulnaga") in view of U.S. Patent No. 6,427,123 issued to

Sedlar ("Sedlar") and further in view of *Path Sharing and predicate evaluation for high-*

performance XML filtering by Diao et al. ("Diao"). The rejection is respectfully traversed.

Claim 9

Claim 9 recites:

A method comprising the computer-implemented steps of:
gathering statistics by a database server about nodes that are stored in a database
          repository that is managed by the database server;
wherein said nodes form a hierarchy;
wherein each node is either an XML file or an XML file container;
wherein at least one node in the hierarchy is an XML file container that contains a
          plurality of XML files, each of which contains a plurality of XML elements;
storing said statistics; and
**in response to a single request to the database server for access to one or more
          XML resources from said database repository, before the database
          server executes said single request, the database server computing a
          computational cost associated with each of two or more methods of
          accessing said one or more XML resources from said database
          repository, based on said statistics;**
wherein the method is performed by one or more computing devices;
wherein the step of computing a computational cost comprises computing a
          selectivity value for each of one or more predicates, from said request, that
          contain operators on said database repository; and
wherein XML files of said nodes are XML resources, and wherein each of said
          XML resources is stored, in association with a location of a node in said
          hierarchy, in a column of a table in said database repository, and **wherein an
          operator contained in at least one of said one or more predicates is an
          operator that determines whether a particular XML resource can be
          located in said database repository through a particular specified path,
          specified in said at least one predicate, through a portion of said
          hierarchy.**

At least the above-bolded features of Claim 9 are not taught or suggested by Aboulnaga, Sedlar, or Diao, even when taken in combination under 35 U.S.C. § 103(a).

The Office Action cites Aboulnaga, section 1, sixth paragraph and Diao, section 6.4.1, second paragraph as allegedly teaching "in response to a request to the database server for access to one or more XML resources from said database repository, the database server computing a computational cost associated with each of two or more methods of accessing said one or more XML resources from said database repository, based on said statistics". However, the cited art fails to teach or suggest "in response to a <u>single</u> request to the database server for access to one or more XML resources from said database repository, <u>before the database server executes said single request</u>, the database server computing a computational cost associated with each of two or more methods of accessing said one or more XML resources from said database repository, based on said statistics" recited by Claim 9, as amended.

Aboulnaga, section 1, sixth paragraph describes optimizing a query by "estimating the selectivities of the path expressions [that the query] contains." Diao section 6.4.1, second paragraph describes an experiment using multiple permutations of a query to determine the time required to process nested paths in queries, indicating that "[p]rocessing additional nested paths in queries (in the cases of NP>1), however, costs only a little more than processing the first nested paths." However, both Aboulnaga and Diao fail to teach or suggest "computing a computational cost associated with each of **two or more methods of accessing said one or more XML resources** from said database repository" recited by Claim 9. Diao merely describes evaluating the time spent processing paths in multiple permutations of a query, which is not sufficient to show the above-cited feature of Claim 9. Further, there is no evidence in Aboulnaga or Diao of computations that are based on the statistics as recited in Claim 9.

The Office Action cites Aboulnaga, section 1, second-to-last paragraph, and Aboulnaga, section 4 and figure 6 as allegedly teaching "wherein an operator contained in at least one of said one or more predicates is an operator that determines whether a particular XML resource can be located in said database repository through a particular specified path through a portion of said hierarchy." However, the cited art fails to teach or suggest "wherein an operator contained in at least one of said one or more predicates is an operator that determines whether a particular XML resource can be located in said database repository through a particular specified path, specified in said at least one predicate, through a portion of said hierarchy" recited by Claim 9, as amended.

The second-to-last paragraph of Aboulnaga, section 1, Describes "two techniques for capturing the structure of XML data for estimating the selectivity of path expressions". Aboulnaga, section 4 and figure 6 describe constructing Markov tables, which is one of the mentioned techniques for capturing the structure of XML data. However, Aboulnaga fails to teach or suggest "wherein an operator contained in at least one of said one or more predicates is an operator that determines whether a particular XML resource can be located in said database repository **through a particular specified path, specified in said at least one predicate**, through a portion of said hierarchy" recited by Claim 9.

Claim 10 recites features that are substantially similar to the features of Claim 9, and is patentable over the cited art for at least the same reasons listed above in connection with Claim 9. Furthermore, Claims 30 and 31 recite features that are substantially similar to the features of Claims 9 and 10, respectively, and are patentable over the cited art for at least the same reasons as Claims 9 and 10. Reconsideration is respectfully requested.

Claim 42

Claim 42 recites:

A method comprising the computer-implemented steps of:
in response to a request for access to one or more XML resources from a database
repository within a database management system,
    accessing, from said database management system, statistics about a
        structure of a hierarchy associated with said one or more XML
        resources;
    wherein nodes form said hierarchy;
    wherein each node of said hierarchy is either an XML file or an XML file
        container; and
    wherein at least one node in the hierarchy is an XML file container that
        contains a plurality of XML files, each of which contains a plurality
        of XML elements;
    computing a computational cost associated with each of two or more
        methods of accessing said one or more XML resources from
        said database repository, based on said statistics;
    wherein the two or more methods of accessing said one or more XML
        resources from said database repository include accessing said
        one or more XML resources through an index and accessing
        said one or more XML resources without using the index;
    wherein the method is performed by one or more computing devices;
    wherein XML files of said nodes are XML resources, and wherein the step
        of computing a computational cost comprises (a) computing a
        selectivity value for each of one or more predicates, from said
        request, that contain operators on said database repository and (b)
        computing a computational cost of traversing, to locate a
        particular XML resource specified in said request, an index in
        which said XML resources are indexed to said database
        repository.

At least the above-bolded features of Claim 42 are not taught or suggested by Aboulnaga,

Sedlar, or Diao, even when taken in combination under 35 U.S.C. § 103(a).

The Office Action cites Diao section 6.4.1, second paragraph, as allegedly teaching

"computing a computational cost associated with each of two or more methods of accessing said

one or more XML resources from said database repository, based on said statistics". However,

the cited portion of Diao fails to teach or suggest "computing a computational cost associated

with each of two or more methods of accessing said one or more XML resources from said

database repository, based on said statistics; wherein the two or more methods of accessing said one or more XML resources from said database repository include accessing said one or more XML resources through an index and accessing said one or more XML resources without using the index" recited by Claim 42, as amended.

As previously stated, Diao section 6.4.1, second paragraph describes an experiment using multiple permutations of a query to determine the time required to process nested paths in queries. However, Diao fails to teach or suggest "computing a computational cost associated with each of **two or more methods of accessing said one or more XML resources** from said database repository, based on said statistics" recited by Claim 42. Diao merely describes evaluating the time spent processing paths in multiple permutations of a query, which is not sufficient to show the above-cited feature of Claim 42. Further, there is no evidence in Diao of computations that are based on the statistics as recited in Claim 42.

Furthermore, because Diao fails to show "computing a computational cost associated with each of two or more methods of accessing said one or more XML resources", Diao certainly fails to teach or suggest "wherein the two or more methods of accessing said one or more XML resources from said database repository include accessing said one or more XML resources through an index and accessing said one or more XML resources without using the index".

The Office Action cites Diao, section 5.3, last three paragraphs, and Diao, section 6.2.2, second to last paragraph as allegedly teaching "computing a computational cost of traversing, to locate a particular XML resource specified in said request, an index in which said XML resources are indexed to said database repository" recited by Claim 42. This is incorrect.

Diao, section 5.3 indicates that "[i]f statistics on documents are kept, then the selectivity of predicates on attributes can be estimated . . . ." The second to last paragraph of Diao, section 6.2.2, describes "post-processing" performed for a particular query. The first paragraph of Diao

section 6.2.2 indicates that performing "post-processing" is one of two phases of processing queries containing nesting paths. There is no evidence that the cited portions of Diao describe **computing a computational cost of traversing an index** to locate a particular XML resource specified in a request, as recited by Claim 42.

Claim 46 recites features substantially similar to the features of Claim 42, and is patentable over the cited art for at least the same reasons as Claim 46. Reconsideration is respectfully requested.

Claim 58:

Claim 58 recites features that are substantially similar to the above-bolded features of Claim 42, and is patentable over the cited art for at least the same reasons as listed above in connection with Claim 42. Reconsideration is respectfully requested.

Claim 59:

Claim 59 recites features that are substantially similar to the above-bolded features of Claim 42, and is patentable over the cited art for at least the same reasons as listed above in connection with Claim 42. Also, Claim 61 recites features that are substantially similar to the features of Claim 59, and is patentable over the cited art for at least the same reasons as Claim 59. Reconsideration is respectfully requested.

III.   CONCLUSIONS & MISCELLANEOUS

For the reasons set forth above, all of the pending claims are now in condition for allowance. The Examiner is respectfully requested to contact the undersigned by telephone relating to any issue that would advance examination of the present application.

A petition for extension of time, to the extent necessary to make this reply timely filed, is hereby made. If applicable, please charge our deposit account for the petition for extension of time fee. If any applicable fee is missing or insufficient, throughout the pendency of this application, the Commissioner is hereby authorized to charge any applicable fees and to credit any overpayments to our Deposit Account No. 50-1302.

Respectfully submitted,

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